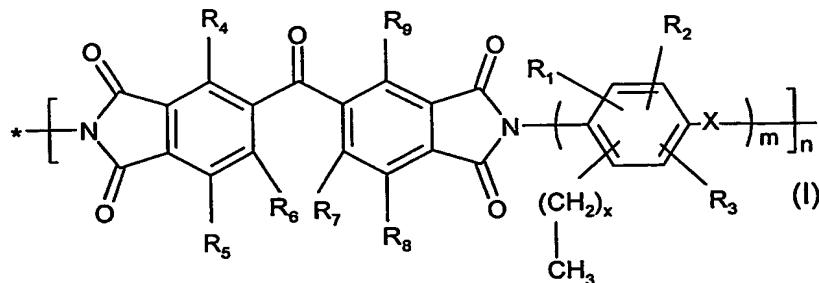


## CLAIMS

## 1. An optical waveguide comprising:

5      a) a support layer;  
       b) a core layer including a cross-linked polymeric material obtained by UV  
           irradiation of a polyimide having repeating units of formula (I)



wherein R<sub>1</sub>, R<sub>2</sub>, and R<sub>3</sub> independently represent hydrogen or a (C<sub>1</sub>-C<sub>6</sub>)-alkyl group,

10     R<sub>4</sub>, R<sub>5</sub>, R<sub>6</sub>, R<sub>7</sub>, R<sub>8</sub> and R<sub>9</sub> independently represent hydrogen, a (C<sub>1</sub>-C<sub>6</sub>)-alkyl group, a (C<sub>1</sub>-C<sub>6</sub>)alkenyl or an aryl group;  
       X is selected from a covalent bond; a (CH<sub>2</sub>)<sub>y</sub> group, wherein y is an integer from 1 to 10; O; S; NR, wherein R is (C<sub>1</sub>-C<sub>4</sub>)alkyl.

x is 0-5,

15     m is 1-10

n is an integer having an average value of from 5 to 50,000,  
       and the deuterated derivatives thereof.

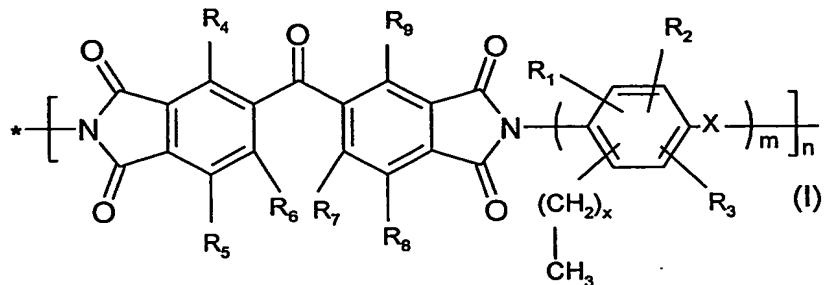
2. Optical waveguide according to claim 1 wherein R<sub>1</sub>, R<sub>2</sub>, R<sub>3</sub> and R<sub>4</sub> independently represent hydrogen or a (C<sub>1</sub>-C<sub>3</sub>)alkyl group.

20     3. Optical waveguide according to claim 1 wherein said support has a refractive index lower than that of said cross-linked polymeric material.

4. Optical waveguide according to claim 1 wherein said support layer is a glass layer.

25     5. Optical waveguide according to claim 1 comprising a cladding layer disposed over said core layer on the opposite side of that of the support layer.

6. Method for producing an optical waveguide comprising the steps of  
 a) spin-coating a polyimide of general formula (I)



wherein R<sub>1</sub>, R<sub>2</sub>, and R<sub>3</sub> independently represent hydrogen or a (C<sub>1</sub>-C<sub>6</sub>)alkyl group,

R<sub>4</sub>, R<sub>5</sub>, R<sub>6</sub>, R<sub>7</sub>, R<sub>8</sub> and R<sub>9</sub> independently represent hydrogen, a (C<sub>1</sub>-C<sub>6</sub>)alkyl group, a (C<sub>1</sub>-C<sub>6</sub>)alkenyl or an aryl group;

X is selected from a covalent bond; a {CH<sub>2</sub>}<sub>y</sub> group, wherein y is an integer from 1 to 10; O; S; NR, wherein R is (C<sub>1</sub>-C<sub>4</sub>)alkyl,

x is 0-5,

m is 1-10

n is an integer having an average value of from 5 to 50,000,  
 and the deuterated derivatives thereof,

on a substrate layer to obtain a film of the polyimide of formula (I);

15 b) irradiating the film with UV radiation according to a selected pattern.

7. Method according to claim 6 comprising the step of spin-coating a cladding layer over the core layer.